



**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
--------------------	-------------	-----------------------	---------------------

08/862,192 05/23/97 SKOLNICK

J 07300/034001

LM32/0623

JOHN LAND
FISH AND RICHARDSON
4225 EXECUTIVE SQUARE
SUITE 1400
LA JOLLA CA 92037

EXAMINER

DAVIS, G

ART UNIT

PAPER NUMBER

2762

5

DATE MAILED:

06/23/98

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

- ☐ Responsive to communication(s) filed on _____
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire Three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

- ☒ Claim(s) 1-21 is/are pending in the application.
- Of the above, claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-21 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claims _____ are subject to restriction or election requirement.

Application Papers

- ☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☐ received in Application No. (Series Code/Serial Number) _____
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- ☒ Notice of Reference Cited, PTO-892
- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) _____
- ☐ Interview Summary, PTO-413
- ☒ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

-- SEE OFFICE ACTION ON THE FOI

Art Unit: 2762

1. 35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some unclear, inexact or verbose terms used in the specification are: Fill the space on page 6, line 23.

2. Claims 3-6, 10-13 and 17-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Line 2, delete "MHS" and insert -- major histocompatibility complex (MHS) --.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-21 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Metfessel et al, "Pattern Recognition in the Prediction of protein Structural Class", IEEE Proceedings of the 26th Hawaii international Conference on System Sciences, Jan. 1993.

Art Unit: 2762

As per claims 1, 2, 8, 9, 15 and 16, Metfessel discloses training an artificial neural network (pages 684-686, section 2.6), applying to the ANN at least one peptide-like molecule (abstract and pages 684-686, section 2.6) and analyzing each applied test peptide-like molecule using ANN to predict a relative binding affinity (abstract and pages 684-686, section 2.6).

Claims 2-7, 10-14 and 17-21 are also taught by Metfessel's reference.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-21 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Soren Kamaric Riis, "Combining Neural Networks for Protein Secondary Structure Prediction", IEEE Proceedings of ICNN, Nov.-Dec. 1995.

As per claims 1, 2, 8, 9, 15 and 16, Riis discloses training an artificial neural network (figure 1 and pages 1745 and 1746, sections 2.1 and 2.2), applying to the ANN at least one peptide-like molecule (abstract and figure 1 and pages 1745 and 1746, sections 2.1 and 2.2) and analyzing each applied test peptide-like molecule using ANN to predict a relative binding affinity (abstract and figure 1 and pages 1745 and 1746, sections 2.1 and 2.2).

Art Unit: 2762

Claims 2-7, 10-14 and 17-21 are also taught by Riis reference.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-21 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Holley et al, "Neural networks for Protein Structure Prediction", method in enzymology, vol. 202, 1991.

As per claims 1, 2, 8, 9, 15 and 16, Holley discloses training an artificial neural network (figure 1 and pages 210-213), applying to the ANN at least one peptide-like molecule (figure 1 and pages 210-213) and analyzing each applied test peptide-like molecule using ANN to predict a relative binding affinity (abstract and figure 1 and pages 210-213).

Claims 2-7, 10-14 and 17-21 are also taught by Holley's reference.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

Art Unit: 2762

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-21 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Kneller et al, "Improvements in Protein Secondary Structure Prediction by An Enhanced Neural Network", J. Mol. Biol., vol. 214, 1990.

As per claims 1, 2, 8, 9, 15 and 16, Kneller discloses training an artificial neural network (figure 2 and abstract and page 179), applying to the ANN at least one peptide-like molecule (abstract and figure 2 and page 179) and analyzing each applied test peptide-like molecule using ANN to predict a relative binding affinity (abstract and figure 2 and pages 173 and 179).

Claims 2-7, 10-14 and 17-21 are also taught by Kneller's reference.

7. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title.

Claims 1-6, 8-13 and 15-20 are rejected under 35 U.S.C. 101 because they are directed to non-statutory subject matter.

The Computer-Implemented Guidelines describe the examination procedures for computer related Invention. The guidelines recite the following questions to determine if the claimed invention is directed to statutory or non-statutory subject matter:

First Question

Art Unit: 2762

Does disclosed invention has a practical application in the technological arts?

Second Question

Is claimed invention functional descriptive material (data structure per se or computer program per se)?

Third Question

Is claimed invention non-functional descriptive material (e.g. music, literary works, mere data) per se, or on a computer readable medium?

Fourth Question

Is claimed invention a natural phenomenon (e.g. energy or magnetism)?

If the answer to any of the second, third and fourth questions is yes then the claimed invention is directed to non-statutory subject mater.

If the answer to any of the second, third and fourth questions is no, fifth question should be asked.

Fifth Question

Is the claimed invention a series of steps to be performed on a computer?

If the answer to the fifth question is no, sixth question should be asked.

Sixth question

Art Unit: 2762

Is the claimed invention a product (machine or manufacture) for performing a process or a specific machine or manufacture?

If the answer to sixth question is yes then the claimed invention is directed to statutory subject mater.

If the answer to the fifth question is yes and the answer to the sixth question is no, seventh question should be asked to evaluate a process.

Seventh question

Does the process have post-computer activity (performs independent physical acts) or does the process have pre-computer process activity (manipulates data representing physical objects of activities to achieve a practical application?'

If the answer to the seventh question is yes then the claimed invention is directed to statutory subject mater.

If the answer to the seventh question is no, eighth question should be asked.

Eight Question

Is the claimed invention merely manipulates abstract idea without any limitation to a practical application or is the claimed invention merely solves a purely mathematical problem without any limitation to a practical application?

If the answer to the eight question is no then the claimed invention is directed to statutory subject mater.

Art Unit: 2762

If the answer to the eight question is yes then the claimed invention is directed to non-statutory subject mater.

Applying the guidelines to the claimed invention:

The disclosed invention has no practical application in the technological arts as shown in the specification; the claimed invention is not a functional or non-functional descriptive materials or natural phenomenon; the claimed invention has no series of step to be performed on a computer; the claimed invention is not post-computer process activity or pre-computer process activity; and the claimed invention merely manipulate abstract idea without any limitation to a practical application. Therefore, claims 1-6, 8-13 and 15-22 are directed to non-statutory subject matter as follow:

As to claims 8-4, they are written in means-plus-function format and for the purpose of this rejection are being treated as though they are method claims. The courts have held that such treatment is acceptable:

"If the functionally-defined disclosed means and their equivalents are so broad that they encompass any and every means for performing the recited functions, the apparatus claim is an attempt to exalt form over substance since the claim is really to the method or series of functions itself. In computer-related inventions, the recited means often perform the function of "number crunching" (solving mathematical

Art Unit: 2762

algorithms and making calculations). In such cases the burden must be placed on the applicant to demonstrate that the claims are truly drawn to specific apparatus distinct from other apparatus capable of performing the identical functions.

If this burden has not been discharged, the apparatus will be treated as if it were drawn to the method or process which encompasses all of the claimed "means."

08/862192-0549

See In re Walter 205 USPQ 397, 408 (CCPA 1980), In re Abele 214 USPQ 682, 688 (CCPA 1982), and Ex parte Akamatsu, 22 USPQ 2d 1915, 1920. The disclosed apparatus of appellant's specification is solely in terms of the functions to be performed. Beyond this appellant fails to disclose any specific apparatus for carrying out the disclosed functions. Appellant has failed to discharge his burden of demonstrating that the claims are drawn to any specific apparatus distinct from other apparatus capable of performing the same function.

Claims 1-6, 8-13 and 15-20 merely manipulate abstract idea without any limitation to a practical application.

Analyzing claims 1, 2, 8, 9 15 and 16 we have the following:

CLAIM 1

Lines 1 and 2, ❖A method for identifying relative binding motifs of peptide-like molecules, comprising the

Art Unit: 2762

steps of❖ is at best a field of use limitation. The Court has held that a field of use limitation cannot make a claim statutory by "attempting to limit the use of the formula to a particular technological environment." Diamond v. Diehr 209 USPQ 1, 10 (S Ct 1981). Thus, the field of use limitation of claim 1 fails to render the claim statutory.

Lines 3-8, parts (a)-(c) merely manipulate abstract idea without any limitation to a practical application.

CLAIM 2

Line 1, ❖A method for identifying relative peptide binding motifs, comprising the steps of❖ are at best a field of use limitation. The Court has held that a field of use limitation cannot make a claim statutory by "attempting to limit the use of the formula to a particular technological environment." Diamond v. Diehr 209 USPQ 1, 10 (S Ct 1981). Thus, the field of use limitation of claim 2 fails to render the claim statutory.

Lines 2-11, parts (a)-(c) merely manipulate abstract idea without any limitation to a practical application.

CLAIM 8

Lines 1 and 2, ❖A method for identifying relative binding motifs of peptide-like molecules, comprising❖ is at best a field of use limitation. The Court has held that a

Art Unit: 2762

field of use limitation cannot make a claim statutory by "attempting to limit the use of the formula to a particular technological environment." Diamond v. Diehr 209 USPQ 1, 10 (S Ct 1981). Thus, the field of use limitation of claim 1 fails to render the claim statutory.

Lines 3-8, parts (a)-(c) merely manipulate abstract idea without any limitation to a practical application.

CLAIM 9

Line 1, ¶A method for identifying relative peptide binding motifs, comprising¶ are at best a field of use limitation. The Court has held that a field of use limitation cannot make a claim statutory by "attempting to limit the use of the formula to a particular technological environment." Diamond v. Diehr 209 USPQ 1, 10 (S Ct 1981). Thus, the field of use limitation of claim 2 fails to render the claim statutory.

Lines 2-11, parts (a)-(c) merely manipulate abstract idea without any limitation to a practical application.

CLAIM 15

Lines 1-3, ¶A computer program, reading ... causing a computer to¶ are at best a field of use limitation. The Court has held that a field of use limitation cannot make a claim statutory by "attempting to limit the use of the

Art Unit: 2762

formula to a particular technological environment." Diamond v. Diehr 209 USPQ 1, 10 (S Ct 1981). Thus, the field of use limitation of claim 2 fails to render the claim statutory.

Lines 4-9, parts (a)-(c) merely manipulate abstract idea without any limitation to a practical application.

CLAIM 16

Lines 1-3, ¶A computer program, reading ... causing a computer to¶ are at best a field of use limitation. The Court has held that a field of use limitation cannot make a claim statutory by "attempting to limit the use of the formula to a particular technological environment." Diamond v. Diehr 209 USPQ 1, 10 (S Ct 1981). Thus, the field of use limitation of claim 2 fails to render the claim statutory.

Lines 4-13, parts (a)-(c) merely manipulate abstract idea without any limitation to a practical application.

Claims 3-6, 10-13 and 17-20 are also manipulate abstract idea without any limitation to a practical application.

When claims 1-6, 8-13 and 15-20 are taking as a whole the claims are directed to manipulating abstract idea without any limitation to a practical application.


08/862192-2762

Art. Unit: 2762

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Davis whose telephone number is (703) 305-9640. The fax phone number for this Group is (703) 305-3988.

G. Davis

June 16, 1998


GEORGE B. DAVIS
PRIMARY PATENT EXAMINER

2025 JUN 16 10 30 AM '98

NOTICE OF DRAFTPERSON'S PATENT DRAWING REVIEW

The drawing filed (insert date) 5/23/97 are:

A. not objected to by the Draftperson under 37 CFR 1.84 or 1.152.

B. objected to by the Draftperson under 37 CFR 1.84 or 1.152 as indicated below. The Examiner will require submission of new, corrected drawings where necessary. Corrected drawings must be submitted according to the instructions on the back of this notice.

1. DRAWINGS. 37 CFR 1.84(a): Acceptable categories of drawings:

Black ink. Color.

 Color drawing are not acceptable until petition is granted.

Fig.(s)

 Pencil and non black ink is not permitted. Fig(s)

2. PHOTOGRAPHS. 37 CFR 1.84(b)

 Photographs are not acceptable until petition is granted,

 3 full-tone sets are required. Fig(s)

 Photographs not properly mounted (must be on board or photographic double-weight paper). Fig(s)

 Poor quality (half-tone). Fig(s)

3. TYPE OF PAPER. 37 CFR 1.84(c)

 Paper not flexible, strong, white and durable.

Fig.(s)

 Erasures, alterations, overwritings, interlineations, folds, copy machine marks not acceptable. (too thin)

 Mylar, vellum paper is not acceptable (too thin).

Fig(s)

4. SIZE OF PAPER. 37 CFR 1.84(f): Acceptable sizes:

 21.0 cm by 29.7 cm (DIN size A4)

 21.6 cm by 27.9 cm (8 1/2 x 11 inches)

 All drawings sheets not the same size.

Sheet(s)

5. MARGINS. 37 CFR 1.84(g): Acceptable margins:

Top 2.5 cm Left 2.5 cm Right 1.5 cm Bottom 1.0 cm

SIZE: A4 Size

Top 2.5 cm Left 2.5 cm Right 1.5 cm Bottom 1.0 cm

SIZE: 8 1/2 x 11

 Margins not acceptable. Fig(s)

 Top (T) Left (L)

 Right (R) Bottom (B)

6. VIEWS. 37 CFR 1.84(h)

REMINER: Specification may require revision to correspond to drawing changes.

 Views connected by projection lines or lead lines.

Fig.(s)

Partial views. 37 CFR 1.84(h)(2)

 Brackets needed to show figure as one entity.

Fig.(s)

 Views not labeled separately or properly.

Fig.(s)

 Enlarged view not labeled separately or properly.

Fig.(s)

7. SECTIONAL VIEWS. 37 CFR 1.84(h)(3)

 Hatching not indicated for sectional portions of an object.

Fig.(s)

 Sectional designation should be noted with Arabic or

Roman numbers. Fig.(s)

8. ARRANGEMENT OF VIEWS. 37 CFR 1.84(i)

 Words do not appear on a horizontal, left-to-right fashion when page is either upright or turned, so that the top becomes the right side, except for graphs. Fig.(s)

 Views not on the same plane on drawing sheet. Fig.(s)

9. SCALE. 37 CFR 1.84(k)

 Scale not large enough to show mechanism with crowding when drawing is reduced in size to two-thirds in reproduction.

Fig.(s)

10. CHARACTER OF LINES, NUMBERS, & LETTERS. 37 CFR 1.84(l)

 Lines, numbers & letters not uniformly thick and well defined, clean, durable and black (poor line quality).

Fig.(s)

11. SHADING. 37 CFR 1.84(m)

 Solid black areas pale. Fig.(s)

 Solid black shading not permitted. Fig.(s)

 Shade lines, pale, rough and blurred. Fig.(s)

12. NUMBERS, LETTERS, & REFERENCE CHARACTERS. 37 CFR 1.48(p)

 Numbers and reference characters not plain and legible.

Fig.(s)

 Figure legends are poor. Fig.(s)

 Numbers and reference characters not oriented in the same direction as the view. 37 CFR 1.84(p)(3) Fig.(s)

 English alphabet not used. 37 CFR 1.84(p)(3) Fig.(s)

 Numbers, letters and reference characters must be at least .32 cm (1/8 inch) in height. 37 CFR 1.84(p)(3) Fig.(s)

13. LEAD LINES. 37 CFR 1.84(q)

 Lead lines cross each other. Fig.(s)

 Lead lines missing. Fig.(s)

14. NUMBERING OF SHEETS OF DRAWINGS. 37 CFR 1.48(t)

 Sheets not numbered consecutively, and in Arabic numerals beginning with number 1. Fig.(s)

15. NUMBERING OF VIEWS. 37 CFR 1.84(u)

 Views not numbered consecutively, and in Arabic numerals, beginning with number 1. Fig.(s)

16. CORRECTIONS. 37 CFR 1.84(w)

 Corrections not made from PTO-948 dated

17. DESIGN DRAWINGS. 37 CFR 1.152

 Surface shading shown not appropriate. Fig.(s)

 Solid black shading not used for color contrast.

Fig.(s)

COMMENTS

REVIEWER A.D.

DATE 3/3/98

TELEPHONE NO. 7033058404

ATTACHMENT TO PAPER NO. 5